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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 4015-5161

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on ______________________

Signature ______________________

Typed or printed name ______________________

Application Number	Filed
10/800,167	12 March 2004
First Named Inventor	
Cairns	
Art Unit	**Examiner**
2611	Fotakis

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant/inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- [X] attorney or agent of record. Registration number 53,639.
- [ ] attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 ______________

Jennifer K. Stewart
Signature

Jennifer K. Stewart
Typed or printed name

919-854-1844
Telephone number

July 23, 2008
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

[X] *Total of 1 forms are submitted.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Cairns et al.**	)	PATENT PENDING
Serial No.: **10/800,167**	)	Examiner: Aristocratis Fotakis
Filed: **12 March 2004**	)	Group Art Unit: 2611
For: **Method and Apparatus for Parameter Estimation in a Generalized RAKE Receiver**	)	Confirmation No.: 9086
Docket No: **4015-5161**	)	

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CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

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23 July 2008 — Laura Wade

Date — Laura A. Wade

This correspondence is being:

☒ electronically submitted via EFS-Web

ARGUMENTS PRESENTED FOR PRE-APPEAL BRIEF REQUEST FOR REVIEW

In response to the Final Office Action mailed 23 May 2008, the applicants submit the following remarks in support of the Pre-Appeal Brief being filed concurrently with a Notice of Appeal. If the accompanying payment does not cover all fees, please charge any remaining fees to Deposit Account No. 18-1167.

Claims 1 – 59 are currently pending, of which claims 1, 35, 36, 39, and 56 are independent. Independent claims 1, 35, 36, 39, and 56 stand finally rejected under §102(b) as anticipated by Nielsen (US2002/0080863). Independent claims 1, 35, 36, 39, and 56 also stand finally rejected under §102(b) as anticipated by Kutz ("Low Complexity Implementation of a Downlink CDMA Generalized RAKE Receiver," IEEE 2002). As explained in further detail below, the cited references both fail to teach the claimed fitting process.

The claimed invention determines signal impairment correlations for use in received signal processing. Independent claim 1 includes the step of adapting model fitting parameters based on measured received signal impairment correlations and one or more model impairment terms using a fitting process. In other words, the claimed model fitting parameters are adjusted based on measured impairment correlations to "fit" the modeled impairment terms to the measured impairment terms. Independent claim 1 further includes the step of calculating modeled impairment correlations based on the adapted model fitting parameters. Each of the remaining independent claims (35, 36, 39, and 56) also include the "fitting process" limitation.

Nielsen describes a trial-and-error process for determining combining weights for a RAKE receiver to achieve a desired signal-to-noise ratio (SNR). In Nielsen, an Adaptive Generalized Matched Filter (AMGF) weight determination module determines combining weights by varying candidate combining weights until the SNR of the RAKE receiver output reaches a peak value (see Abstract). More particularly, Nielsen uses different total noise covariance matrices $\mathbf{R}_u$, where $\mathbf{R}_u$ may be calculated as the sum of a predetermined impairment $\mathbf{R}_{IND}$ and a measured impairment $\mathbf{R}_{DEP}$, both of which are scaled as a function of a scaling factor r_o, to determine different sets of combining weights $\mathbf{w}$. The AMGF module generates the different total noise covariance matrices by varying r_o while holding $\mathbf{R}_{IND}$ and $\mathbf{R}_{DEP}$ constant. For each of the resulting sets of combining weights $\mathbf{w}$, Nielsen determines a RAKE receiver output $\mathbf{z}$ and a corresponding SNR. Nielsen selects the combining weights $\mathbf{w}$ that produce the maximum SNR at the RAKE receiver output. See at least ¶s [0040] and [0042] – [0046].

It is important to note that Nielsen incrementally varies a scaling factor (e.g., r_o) applied to a measured impairment (e.g., $\mathbf{R}_{DEP}$) to generate the combining weights necessary to meet a desired quality of service (e.g., SNR). Nielson self-evidently does not fit modeled impairment

correlations to measured impairment correlations. Even if *arguendo* Nielsen's process could be described as some sort of fitting process, as asserted by the examiner, Nielsen's process still does not scale **modeled** impairment terms to fit to a **measured** impairment correlation, as recited in the claims. In other words, Nielsen's scaling factor (e.g., r_o) scales a measured impairment instead of the claimed modeled impairment terms, and Nielsen does not fit the scaled correlation to a measured impairment correlation, as required by the claimed invention. As such, Nielsen does not teach or suggest adapting model fitting parameters used to scale model impairment terms to fit the model impairment terms to measured impairment correlations.

Because Nielsen's process cannot be construed as equivalent to the claimed fitting process, Nielsen does not anticipate the independent claims or any claim depending therefrom. Thus, the pending claims are new and non-obvious over Nielsen. The applicants respectfully request reconsideration.

The rejection arguments based on Kutz rely on a mischaracterization of Kutz's actual teachings. When correctly understood, Kutz does not teach or suggest the invention of independent claims 1, 35, 36, 39, or 56. For example, the OA states that Eqs. 11-14 in Kutz teach computing one or more model impairment terms within the meaning of the claims at issue, while Eq. 10 in Kutz is alleged as teaching the measuring of received signal impairment correlations within the meaning of the claims. These characterizations are key to the rejection argument, which concludes with the assertion that Kutz uses the model impairment terms obtained via Eqs. 11-14 and the measured impairment correlations obtained via Eq. 10, to perform the claimed adaptation of model fitting parameters based on measured received signal impairment correlations.

A simple read of Kutz demonstrates the error of the rejection argument. Eq. 9 on p. 1358 of Kutz defines Kutz's interference covariance matrix as $R_u = diag\left[R_u^i,\ldots,\ R_u^M\right]$. Eq. 10 on the

same page clarifies that each diagonal element of R_u itself is an interference covariance matrix associated with the i^{th} base station. Each such element is constructed from the covariance matrices of inter-symbol interference (R_{ISI}^{i}), same-cell multiple access interference (R_{OW}^{i}), and other-cell MAI (R_{OT}^{i}). These individual covariance matrices are scaled as a function of total average energy per symbol.

With this setup in mind, Eqs. 11-14 are expressly defined by Kutz as the expected-value calculations to be performed for computing the individual covariance matrices $\left(R_{ISI}^{i}, R_{OW}^{i}, R_{OT}^{i}\right)$. Particularly, in introducing and defining Eqs. 11-14, Kutz states that, "[u]sing the pseudo-randomness and orthogonality properties for the scrambling sequences, the expected values of the covariance matrices elements are...." Col. 1 on the same page of Kutz provides the standard definition of expected value as being $E\left[\overline{u}\overline{u}^{H}\right]$.

Thus, Eq. 10 represents the direct computation of overall interference covariance matrix for the i^{th} base station, and Eqs. 11-14 are plainly described as nothing more than the underlying detailed calculations for computing the individual covariance matrices included in Eq. 10. Kutz's plain language flatly contradicts the Office's assertion that Eq. 10 relates to measuring impairment correlations, while Eqs. 11-14 on the other hand relate to a calculating modeled impairment correlations.

Further, the balance of teachings in Kutz, including those further sections cited by the examiner, do not relate to fitting modeled impairment correlations to measured impairment correlations in a model fitting process. Instead, they explain how look-up tables can be used to simplify the calculations represented in Eqs. 11-14. Such teachings underlie Kutz's goal of reducing GRAKE implementation complexity. The applicants therefore respectfully submit that the Office's explanation of Kutz is not supported by the actual teachings of Kutz. When Kutz is

properly characterized, it is clear that Kutz is not relevant to the patentability of the claims at issue, and all Kutz-based rejections should be withdrawn.

For at least these reasons, the claimed invention is new and non-obvious over the cited art. The applicants respectfully request that the Panel withdraw all rejections and allow this application.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.

Dated: 23 July 2008

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